Health Promotion Through Audio Visual and Simulation Effectively Reduces Children's Anxiety Due to Hospitalization

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ABSTRACT

Preschool-aged children who are hospitalized are prone to anxiety. This anxiety, if not treated, can hinder the treatment process, and the length of treatment will increase. This study aims to determine the effect of health promotion using audio-visual media and simulations on the anxiety of hospitalized children in Mimika, Papua, Indonesia. The research used a quasi-experimental with a pretest-posttest control group. The sample used the control and intervention groups with 24 people in each group, the sampling technique used consecutive sampling. The instruments used were animated videos about medical devices and procedures, medical devices for simulation, standard operating procedures, observation sheets, and the Modified Yale Preoperative Anxiety Scale (mYPAS) anxiety questionnaire. Bivariate analysis is Paired T-Test and Independent T-Test: The intervention group decreased the average posttest anxiety score more than the control group (30.0>5.4). Bivariate test between gender and age with anxiety showed p<0.05. The pretest-posttest comparison in the control and intervention groups was p=0.343 and p=0.000. At the same time, the comparison of posttest between the control and intervention groups showed p=0.002. Age and gender are related to the anxiety of pediatric patients. Health promotion and simulation of health tools and measures effectively reduce anxiety in pediatric patients.

ABSTRAK

Anak usia prasekolah yang dirawat di rumah sakit rentan terhadap kecemasan. Kecemasan ini jika tidak diobati dapat menghambat proses pengobatan, dan lamanya pengobatan akan bertambah. Penelitian ini bertujuan untuk mengetahui pengaruh promosi kesehatan menggunakan media audio visual dan simulasi terhadap kecemasan anak rawat inap di Mimika, Papua, Indonesia. Penelitian menggunakan eksperimen semu dengan pretest-posttest control group. Sampel menggunakan kelompok kontrol dan intervensi dengan jumlah masing-masing 24 orang, teknik pengambilan sampel menggunakan consecutive sampling. Instrumen yang digunakan adalah video animasi tentang alat dan prosedur medis, alat simulasi medis, prosedur operasi standar, lembar observasi, dan kuesioner kecemasan Modified Yale Preoperative Anxiety Scale (mYPAS). Analisis bivariat adalah Paired T-Test dan Independent T-Test: Kelompok intervensi mengalami penurunan rata-rata skor kecemasan posttest lebih besar dibandingkan kelompok kontrol (30,0>5.4). Uji bivariat antara jenis kelamin dan usia dengan kecemasan menunjukkan p<0,05. Perbandingan pretest-posttest pada kelompok kontrol dan intervensi adalah p=0,343 dan p=0,000. Sementara itu, perbandingan posttest antara kelompok kontrol dan intervensi menunjukkan p=0,002. Usia dan jenis kelamin berhubungan dengan kecemasan pasien anak. Promosi kesehatan dan simulasi alat dan tindakan kesehatan secara efektif mengurangi kecemasan pada pasien anak.

INTRODUCTION

The World Health Organization stated in 2018 that 3-10% of pediatric patients treated in the United States experienced stress. Around 3-7% of school-age children cared for in Germany also share the same thing; 5-10% of children hospitalized in Canada and New Zealand also experience signs of stress during hospitalization (World Health Organization, 2018), (CDC, 2019). The child morbidity rate in Indonesia reaches more than 45% of the total child population in Indonesia (Kementrian Kesehatan Republik Indonesia, 2019). The increase in child hospitalization in Indonesia increased by 13% compared to 2017(Badan Pusat Statistik, 2018).

Hospitalization is a crisis that children often face when they first enter the hospital. Children are very susceptible to stress due to changes in the body and environmental conditions. The age and development of the child influence the child's reaction to the crisis. In addition, the severity of the disease and the existing support system also affect the child's stress (Wong, 2009). The pressure the child feels will cause anxiety and influence the acceptance of nursing actions. Januarsih's research shows that all hospitalized children experience anxiety (Nurhayati et al., 2018). When anxious, the child will refuse the action taken to him. The rejection reaction that appears is protest, indicated by the reaction of crying, screaming, looking for and holding tightly to parents, refusing to meet and attacking strangers both verbally and physically. The following reaction is despair, characterized by the child being inactive, withdrawing from others, sad, not interested in the environment, not communicating, and refusing to eat or drink (Hockenberry & Wilson, 2013).

They were handled as early as possible because delays in managing anxiety will harm the child's healing process (Delvecchio et al., 2019). Anxiety of children who are treated, if not treated immediately, will make children refuse to take nursing and treatment actions. Anxiety affects the length of care and can aggravate the condition of the disease suffered by the (Bandiyah, 2017). Hospitalization is becoming increasingly scary for children due to the COVID-19 pandemic. While cases are increasing, medical personnel's clothing using hazmat suits such as astronaut suits increase children's stress level so that children refuse to take actions given by medical personnel.

Nurses have an essential role as educators in the patient's healing process and providing support for children and families to reduce children's anxiety responses to hospitalization (Yoo & Cho, 2020). If a nurse cannot provide education, the patient will feel anxious because they cannot accept procedures at the hospital (Suminar et al., 2017). In this study, education was used as an intervention in dealing with the anxiety of hospitalized children. In contrast to studies, others used play therapy (Nurwulansari et al., 2019) (Liu & Chou, 2021), telling story (Sari et al., 2021), (Yati et al., 2017) or watching cartoons (Burns-Nader & Hernandez-Reif, 2015), to deal with anxiety. The use of education with videos and simulation tools has never been done. The education and learning provided are by the child's developmental age; this is expected to reduce children's anxiety during hospitalization.

Based on preliminary data, educational therapy with videos and simulations to reduce anxiety in treated children has never been done at the Mimika Regency General Hospital. The number of patients from January to December 2020 was 802 patients. The average length of treatment for pediatric patients in the splint room is 3-5 days. Observation results show that most of the children under the age of 6 who are treated show an attitude of refusing to undergo medical examinations and actions by doctors and nurses. The refusal is offered by crying, pulling away, hugging his parents tightly and inviting them home. Patients still feel traumatized when they see nurses come to perform nursing actions. Based on the described background, researchers are interested in researching the effect of health promotion using videos and simulations on the anxiety of children undergoing hospitalization.

METHOD

This research uses a quasi-experimental design with a control group pretest and posttest design. The researcher conducted the study on June-July 2021 in the Children's Room of the Mimika Regency General Hospital, Papua, Indonesia. The independent variable is providing education using audiovisual about the animation of medical devices, while anxiety is the dependent variable. The population uses the average number of hospitalizations per month, 67 patients. The sample was divided into two groups, namely control and intervention. Calculation of the number of models using the Federer formula, (t - 1) (n - 1) 15 with the explanation n = number of subjects for each group, and t = number of groups. The calculation results show that the number of samples required is 16 people per group. The researcher added 50% for the anticipated dropout so that the total number of subjects was 24 people per group. According to the inclusion criteria, the sample is age 3-6 years, parents agree to the child being the respondent, awareness of compos mentis, the first time being treated, having complete parents, and living with parents. Patients who had decreased consciousness and had tantrums were excluded. The sampling technique to get a sample used consecutive sampling, while selecting a research group member used simple random sampling. Researchers used a lottery system by providing answer choices for the control and intervention groups. Patients become members of the group according to the choices made.

The instrument used is divided into two parts: the tool for providing education and measuring children's anxiety. Tools for giving education consist of standard operating procedures, laptops, animated videos about medical devices and health procedures performed in hospitals. The medical equipment displayed is a stethoscope, thermometer, sphygmomanometer, oximeter, infusion set, and syringe. Health procedures are measuring vital signs (body temperature, oxygen saturation, tensimeter, counting pulse, counting respiration), infusion, administration of oral and injection drugs, taking blood for laboratory examination. The researcher also showed and explained the original medical devices that appeared in the video to the respondents.

Measurement of anxiety using the Modified Yale Preoperative Anxiety Scale (mYPAS) and observation sheets. The mYPAS assessment has 22 criteria consisting of 5 items: activities, sounds, emotional expressions, children's circumstances, and interactions with their families. There are four choices of children's anxiety signs; except for the sound item, there are six choices. The calculation of this instrument produces a score ranging from 22-100. A score of 22 is the lowest score obtained, and a 100 is the highest score. Higher scores indicate more significant anxiety. The instrument validity test uses content validity by pediatric nursing

experts with a value of 0.80. Kappa reliability test got a value of 0.65 (good).

The intervention group received treatment in education, while the control group received no treatment. The control group received the usual treatment according to hospital procedures. The intervention used health education as a health promotion strategy to reduce the anxiety of hospitalised children. The intervention was conducted once for 30 minutes, using audio-visual video media. The intervention is carried out by providing counselling and playing a 20-minute video containing knowledge about the names, functions of medical devices and procedures for actions that will be carried out. At the same time, the child is being treated, followed by a simulation of medical devices. Children's anxiety was measured pretest and posttest. Pretest results from measuring anxiety on the observation sheet, done 10 minutes before receiving education. The posttest results from measuring anxiety on the observation sheet, which is done 10 minutes after receiving the intervention. After collecting posttest data, the researcher

provided education to the intervention group as a form of justice for all respondents.

The respondent's parents represent the child to explain the purpose, benefits, and process of the research. The signing of the informed consent as proof of agreeing to participate in the study was represented by the child's parents. The researcher also explained that all respondents and their parents had the right to resign if they felt disadvantaged during the research process. The study was conducted after obtaining ethical clearance from the Ethics Commission of Universitas Respati Yogyakarta 073.3/FIKES/OL/IV/2021. Research permit number 445 /874/RS/2021 was signed by the hospital director as the basis for conducting research. Univariate analysis using frequency distribution and numerical data description. The normality test using Shapiro Wilk showed that the data were normally distributed (p>0.05). The pretest-posttest bivariate test for each group used a paired T-test. The bivariate test compares between groups using Independent T-test

RESULTS AND DISCUSSION

Table 1
Distribution Characteristics of Respondent

Variable		Control Group	Intervention Group	Total	P*
		f (%)	f (%)	F (%)	
Gender	Male	12 (50.00)	12 (50.00)	24 (50.00)	0.696
	Female	12 (50.00)	12 (50.00)	24 (50.00)	
Age	3	7 (29.17)	9 (37.50)	16 (33.33)	
	4	8 (33.33)	6 (25,00)	14 (29.17)	0.749
	5	5 (20.84)	5 (20,84)	10 (20.84)	
	6	4 (16.66)	4 (16,66)	8 (16.66)	

*Homogenity test used One-way ANOVA

Table 1. showed the same number of boys and girls in both groups. Based on age, it is known that the control group is four years old (33.33%), and the intervention group is three years old (37.50%). The homogeneity test of respondents

between groups based on gender and age using One-way Anova showed the results of p = 0.696 and p = 0.749, meaning that the respondent's data was homogeneous.

Table 2
Cross Tabulation Gender and Age with Anxiety Score's in Control and Intervention Groups

Group	Variable		Anxiety Pretest			Anxiety Posttest		
			Min-Max	Mean ± SD	p-value*	Min-Max	Mean ± SD	p-value*
Intervention	Gender	Male	60-78	67.9±5.78	0.032	23-60	36.4±14.68	0.002
		Female	60-87	68.9±9.55		24-30	27.4±2.76	
	Age	3	78-87	82.4±5.94		24-60	37.8±15.54	
		4	65-69	67.9±1.90	0.021	24-30	27.9±2.79	0.018
		5	60-69	62.9±5.08		28-30	29.4±1.04	
		6	60-69	61.7±2.89		24-30	27.9±3.07	
Control	Gender	Male	60-75	65.76±6.36	0.015	60-69	63.9±3.44	0.020
		Female	60-87	66.7±4.72		55-74	63.4±6.41	
	Age	3	60-69	65.6±4.17		60-74	67.7±5.18	
		4	60-87	68.3±6.52	0.001	60-69	64.7±3.61	0.039
		5	60-69	66.0±6.52		60-67	62.4±3.36	
		6	60-70	64.0±4.18		55-67	62.3±6.43	

*Tested using Mann Whitney

Table 2 shows the average anxiety score of the two groups during the pretest was higher than that of the boys, but at the posttest, the average anxiety score of the boys was higher than that of the girls. The highest average anxiety score in the control group occurred at the age of 4 years (68.3) and the posttest at the age of 3 years (67.7). Different

things happened in the intervention group; age three years showed the highest average anxiety score at pretest and posttest (82.4 and 37.8). The results showed a relationship between gender and age of children with anxiety due to hospitalization in the control group, both pretest (p=0.015 and p=0.001) and posttest (p=0.020 and 0.039). The same

thing happened in the intervention group, gender and age of children related to anxiety due to hospitalization at pretest (p=-.032 and p=0.021) and posttest (p=0.002 and p=0.018).

Table 3
Differences in Anxiety score's pretest-posttest in Control and Intervention Groups

Variable	N	Anxiety Score's		
		Mean	Different Mean	p-value
Pretest Control Group Posttest Control Group	24	67.7±7.80 62.3±4.92	-5.4	0.343*
Pretest Intervention Group Posttest Intervention Group	24	65.2±5.03 32.2±12.12	-30.0	0.000*
Pretest Control Group Pretest Intervention Group	24	67.7±7.80 65.2±5.03	-2.5	0.422*
Posttest Control Group Posttest Intervention Group	24	62.3±4.92 32.2±12.12	-30.1	0.002**

* tested using PairedT-test
** tested using Independent T-Test

Table 3 showed a decrease in the average anxiety of the intervention group more than the control group (30.0>5.4). The results showed no difference between pretest and posttest anxiety in the control group (p=0.343). The opposite result was demonstrated in the intervention group; there was an effect of providing health promotion through videos and simulations on children's anxiety undergoing hospitalization (p=0.000). The comparison of the pretest value of the control group showed p = 0.442, meaning that the data and distribution of the two groups were the same. Comparison of the posttest scores of the control and intervention groups obtained p=0.002. The data shows there is a difference between the groups that received the intervention and those who did not; the difference in the mean in the two groups was 30.1

Getting sick and being hospitalized is a stressor that causes fear and trauma for children. Children will feel stressed, anxious and can even become depressed. The results of this study indicate that all respondents experience anxiety with an average score of > 60. The results align with Nurwulansari et al. found that all respondents felt anxiety and most of the moderate categories(Nurwulansari et al., 2019)(Sari et al., 2021). The difference seen in this study is that anxiety is not categorized but directly presented in a score. Anxiety in children will affect the healing process. When anxious, cortisol production will increase and suppress the immune system to inhibit the healing process (Cañas-González et al., 2020). This causes longer treatment time and higher maintenance costs.

Based on the calculation of the change in anxiety scores, it can be seen that children aged 3 and 4 years experienced an increase in anxiety more than those aged 5 and 6 years. The study results are in line with Wati et al. that the younger the child, the more difficult it is for the child to adapt to the experience of being hospitalized (Wati et al., 2019). According to Wong, the younger the age, the effective coping mechanisms for dealing with anxiety are not yet fully developed (Wong, 2009). Children do not have an excellent ability to adapt to the hospital environment. Many new things are encountered by children while being cared for: the presence of strangers, new places, and the loss of freedom to play. The results also showed that girls' anxiety scores were higher than boys'. This result is in line with the previous, the majority of female respondents experienced anxiety (Wati et al., 2019), and most of them are included in severe anxiety (Aeni et al., 2019) (Khesht-Masjedi et al., 2019). Women tend to experience more anxiety than men because women are softer, use their feelings and hearts when dealing with problems (Wati et al., 2019).

The children in this study belonged to the preschool age development stage. Preschool-age children are the age that is susceptible to disease. The younger the child, the more difficult it is for him to adjust to the experience of being treated in a hospital. Anxiety experienced by children is caused by fear of health workers, medical action, anxiety because they are in a new foreign environment, and anxiety due to separation from friends and family. This funding follows the results of previous studies that children are afraid of health workers(Boztepe et al., 2017), the anxiety of injury to body parts (Ningsih, 2015), anxiety due to medical procedures and actions experienced (Nurhayati et al., 2018).

The different levels of anxiety are also caused by the different responses of each human to stressors. This study follows the cognitive model of fear, which states that different reactions in each individual are influenced by, among other things, weaknesses in various processes (Juanita, 2007). The control group showed no difference in anxiety scores at the pretest and posttest. The average reduction in anxiety scores is also minimal. This condition was caused by the fact that the children in the control group were not given education and simulation about medical devices and procedures carried out in the hospital. While, to the intervention group, the results showed that the intervention effectively reduced children's anxiety. This study supports Patel & Vageria's research that education reduces anxiety in preschool children who experience hospitalization (Patel & Vageriya, 2019). The difference lies in the method used; this study uses videos and live simulations to patients, whereas previously it was a systemic literature review of journals with similar topics.

The education provided is to explain every invasive action and examination carried out by the nurse. Children are introduced to medical devices and explained their functions and work. It aims to correct misconceptions about the use and purpose of medical procedures (Adriana, 2011). In general, infants, toddlers and preschoolers think that all medical devices used by nurses and doctors will be painful for them. Introducing medical equipment such as a stethoscope, sphygmomanometer, thermometer and letting the child hold the equipment directly is expected to help change the negative view of children regarding hospital medical devices during the treatment period before doctors and nurses carry out procedural examinations.

Methods to reduce anxiety in children have been widely studied. The most commonly used approach is played therapy according to the child's developmental stage (Nurwulansari et al., 2019) (Liu & Chou, 2021), (Ibrahim et al., 2020) (Nurjanah& Santoso, 2021). In addition to the type of intervention given, differences are found in the

respondents studied and the methods used. Previous studies used patients with acute respiratory infection(Liu & Chou, 2021), and cancer patients with a systematic review method(Ibrahim et al., 2020). Another study using audiovisuals showed effective results in reducing anxiety (Fatmawati et al., 2019) (Saribu et al., 2021). Even though they both use audiovisual media, this research uses animated videos about health action tools and procedures followed by tool simulation. Previous research used children's cartoon films as therapy. Other therapies also use storytelling interventions to reduce anxiety (Sari et al., 2021)(Yati et al., 2017).

LIMITATION OF THE STUDY

This study has limitations, including the intervention time of each respondent during planning for 30 minutes, but in reality, it is more than that and varies for each child. This condition happened because children showed various reactions during the intervention process, so the researchers involved parents and followed the child's mood during the activity. Another limitation due to the pandemic is that activities are carried out following the health protocol to prevent the spread of Covid-19, one of which is wearing a mask, which causes patients not to see the nurse's expressions and may increase their anxiety. Researchers overcame this problem by speaking as cheerfully and as pleasantly as possible for children.

CONCLUSIONS AND SUGGESTIONS

The results showed that all pediatric patients experienced anxiety when hospitalized. The anxiety is higher in female respondents and younger age. The provision of health promotion regarding medical devices and medical procedures effectively reduces the anxiety of pediatric patients. A decrease in patient pressure will increase patient participation in their care. Future research can pay special attention to female and young patients. Subsequent interventions can involve parents as the closest people to the child.

Acknowledgment

ETHICAL CONSIDERATIONS

The respondent's parents represent the child to explain the purpose, benefits, and process of the research. The signing of the informed consent as proof of agreeing to participate in the study was represented by the child's parents. The researcher also explained that all respondents and their parents had the right to resign if they felt disadvantaged during the research process. The study was conducted after obtaining ethical clearance from the Ethics Commission of Universitas Respati Yogyakarta 073.3/FIKES/OL/IV/2021. Research permit number 445

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Conflict of Interest Statement

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